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12 July 2001

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Authorized Officer: Jaskolski, J
Our ref: 50064/SKU/PKK

REPLY TO WRITTEN OPINION
INTERNATIONAL PATENT APPLICATION PCT/FI00/00622
APPLICANT: NOKIA NETWORKS OY
Due Date: 17 July 2001

As a response to the Written Opinion, we amend the claims (replacement pages 15-17) and respectfully present the following.

The amended claims 1 and 15-19 (original claims 16-20 renumbered) now state that the data frame carry information enabling tandem free operation. In addition, word "certain" is removed from claims 1 and 6. Original claims 6 and 10 are combined to an amended claim 6. Claims 2-5 are original. Claims 10-14 are renumbered original claims 11-15. The wording of Claim 19 (amended claim 20) is clarified.

Document D1 discloses a method, where audio data encoding/decoding is separately switched off in cellular network, if a second endpoint of a call is capable of GSM (or other cellular network) encoding/decoding (page 12, rows 13-17). Document D1 discloses specific switching means through which it is possible to pass coded audio data from a mobile station without applying audio encoding/decoding (page 12, row 35 – page 13, row 2). The specific switching means has determining means SSTDM for determining, whether the second endpoint of the call understands the coded audio data (page 18, rows 9-11 and 27-31). The determining is based on ITU H.245 control signals exchanged between the second endpoint of the call and a mobile station (or a cellular network element setting up the call for the mobile station) (page 20, rows 23-31).

Document D1 thus relates to situations, where a mobile station is involved in a call, whose second endpoint is a terminal reachable via a non-cellular network.

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As claimed, the present invention relates to a situation, where uplink data frames, which carry coded data and signalling information related to the coding for enabling tandem free operation (TFO), are transmitted from a cellular network towards a packet network. These data frames are often called TFO TRAU frames. Tandem free operation is implemented in cellular network in a standard manner: two TFO-capable transcoder and rate adaptation units (TRAU) negotiate a codec for the call, and thereafter the TFO TRAU frames, which carry the encoded audio stream and TFO signalling, are transmitted as part of PCM signal towards mobile switching centers (MSC) and onwards. (description: page 2, rows 26-36)

The claimed invention thus relates to a situation, where at least one endpoint of a call is reachable via a TFO-capable cellular network (or, more specifically, TFO-capable TRAU of a cellular network).

The TRAUs involved in a call negotiate the codec using TFO inband signalling. The signalling is inband signalling: there is no separate signalling connection, signalling is performed by modifying certain bits of the TRAU frame structure in TRAU before transmitting the TFO TRAU towards MSC. Typically in TFO operation, the encoded data is decoded in a TRAU to enable, for example, a handover to a non-TFO-capable TRAU. (description: page 3, rows 1-9)

All these TFO-related features are carried out in cellular networks independently of the network, which connects the two cellular networks, where the endpoints of the call are. Alternatively, if only one endpoint of a call is reachable via a TFO-capable cellular network, it is possible that a gateway connecting this second network to the packet data network is able to construct TFO TRAU frames and perform TFO signalling, thus mimicking a TFO-capable TRAU.

The present invention thus does not affect the operation of cellular network; no modifications to the cellular network elements are required. A separate gateway connecting a cellular network and a packet network - and possible a second gateway connecting the packet network to a non-cellular network and mimicking a TFO-capable TRAU - is sufficient for carrying out the present invention.

The idea disclosed in D1 is not able to support TFO operation. D1 states that H.323 format is used for transmitting audio data (page 26, rows 33-35). The H.323 format does not allow transmission of TFO inband signalling as H.323 format has no place for carrying such information. Furthermore, as discussed above, in D1 there is need separately to detect, when the encoding/decoding functionality in a switching element is switched off.

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Document D2 does not relate to TFO. Document D3 states, on page 5, rows 14-17, that it discloses an arrangement comprising means for either putting the TRAU in a transparent mode or letting the TRAU be bypassed altogether. In D3 the operation of the cellular network is thus also modified, even though D3 relates to enabling TFO over packet network.

Based on the above arguments, we conclude that the claimed invention is new and inventive. A reconsideration of the arguments relating to novelty and inventive step presented in the Written Opinion is therefore respectfully requested.

The description is brought into conformity with the amended claims. Replacement pages 4, 5 and 5a are enclosed.

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Encl. - replacement pages 4, 5, 5a, 17-19

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for a network element connecting a cellular network and a packet network and relaying calls and other connnections to and from the cellular network.

The problem in using compression in gateways when transmitting calls between cellular networks is that in the worst case the speech (or other data) is coded and decoded three times. First in the originating cellular network, then when transmitted between the cellular networks and finally in the destination cellular network. This may recude the quality of the speech drastically.

A futher problem is that even in a case, where both TRAU units involved in a call are TFO capable, it is possible that this feature cannot be utilized. This is because the TFO TRAU frames, which carry information about the speech codecs and TFO capabilities of the TRAUs and which are possible included in the PCM signal, do not necessarily stay unmodified in the compression and decompression in the gateways. Especially the TFO signalling, which is carried in certain bits of the TFO TRAU frame, is sensitive to change due to compression.

The object of the invention is to present a straightforward data transmission method that supports tandem free operation over packet networks. A further object is that the data flow to be transmitted over the packet network is smaller than the data flow coming from the cellular network. Even a further object is that the method for transmitting calls over packet networks is transparent to the cellular networks.

The objects of the invention are achieved by transmitting in the uplink direction over the packet network all non-redundant information from the frames that carry coded data.

A method according to the invention is a method for transmitting data over packet network, where a cellular network is connected to a packet network and uplink data frames, which carry, for enabling tandem free operation, coded data and certain signalling information related to the coding, is transmitted from the cellular network towards the packet network, and it is characterized in that at least all non-redundant information from the uplink data frames is extracted from said frames and transmitted over the packet network.

A transmitting arrangement according to the invention is an arrangement for transmitting data over packet network, which comprises
- means for receiving data in telephony network format and
- means for sending data in packet format, and it is characterized in that it further comprises

- means for separating frames that carry, for enabling tandem free operation, coded data and certain signalling information related to the coding from the received data,
- means for extracting data from said frames and
- means for encapsulating the extracted data into packet protocol packets.

A receiving arrangement according to the invention is an arrangement for transmitting data over packet network, which comprises
- means for receiving data in packet format and
- means for sending data in telephony network format, and it is characterized in that it further comprises
- means for extracting certain information from the received data, which information comprises certain coded data and certain signalling information related to the coding and
- means for processing the extracted information.

The means for processing the extracted information comprise either means for constructing decoded data from said coded data or means for constructing frames that carry, for enabling tandem free operation, said coded data and said signalling information.

The invention relates also to a gateway, which comprises
- means for receiving and sending data in packet format and
- means for receiving and sending data in telephony network format, and which is characterized in that it further comprises
- means for separating frames that carry, for enabling tandem free operation, coded data and signalling information related to the coding from the received telephony data,
- means for extracting data from said frames,
- means for encapsulating the extracted data into packet protocol packets,
- means for extracting certain information from the received packet data, which information comprises coded data and certain signalling information related to the coding and
- means for processing the extracted information.

The means for processing the extracted information comprise either means for constructing decoded data from said coded data or means for constructing frames that carry for enabling tandem free operation said coded data and said signalling information.

In a method according to the invention, a cellular network is connected to a packet network, for example with a gateway. Usually the gateways that connect telephony networks to packet networks compress the speech flow. In a method according to

Claims

1. A method for transmitting data over packet network, where a cellular network is connected to a packet network and uplink data frames, which carry, for enabling tandem free operation, coded data and signalling information related to the coding, are transmitted (112) from the cellular network towards the packet network, **characterized** in that at least all non-redundant information from the uplink data frames is extracted (311, 511, 611, 711) from said frames and transmitted over the packet network.

2. A method according to claim 1, **characterized** in that the uplink data frames are relayed (511) as such.

3. A method according to claim 2, **characterized** in that each uplink data frame is relayed (512) in a packet of a certain packet protocol and that only one uplink data frame related to a certain connection is carried in each packet.

4. A method according to claim 2, **characterized** in that the uplink data frames are divided (611) into parts and each part is transmitted in a packet of a certain packet protocol and that only one part related to a certain connection is carried (612) in each packet

5. A method according to claim 2, **characterized** in that uplink data frames or parts of the uplink data frames related to more than one connection are carried (612) in each packet.

6. A method according to claim 1, **characterized** in that coded data from the uplink data frames is extracted (711) and transmitted over a first packet data connection and signalling information from the uplink data frames is extracted (711) and transmitted over a second packet data connection.

7. A method according to claim 6, **characterized** in that said signalling information is extracted and transmitted over a certain packet data connection that confirms the delivery of packets.

8. A method according to claim 7, **characterized** in that said signalling information is transmitted using Transfer Control Protocol.

9. A method according to claim 7, **characterized** in that said signalling information is transmitted using RTP Control Protocol.

10. A method according to claim 1, **characterized** in that the non-redundant data from the uplink data frames is transmitted using a certain protocol that supports real time applications.

11. A method according to claim 10, **characterized** in that the non-redundant data is transmitted using Real-time Transfer Protocol.

12. A method according to claim 1, **characterized** in that the information transmitted over the packet network is processed on the edge of the packet network.

13. A method according to claim 12, **characterized** in that the coded data, which is part of the non-redundant information transmitted over the packet network, is decoded on the edge of the packet network.

14. A method according to claim 12, **characterized** in that frames, which carry said coded data and said signalling information, are constructed on the edge of the packet network from the non-redundant information transmitted over the packet network.

15. A method according to claim 12, where
- a second cellular network is connected to the packet network,
- second uplink data frames, which carry, for enabling tandem free operation, coded data and signalling information related to the coding, are transmitted from the second cellular network towards the packet network and
- the uplink data frames and the second uplink data frames are related to a certain bidirectional connection, **characterized** in that
- at least all non-redundant information from the second uplink data frames is extracted from said second uplink data frames and transmitted over the packet network and
- all non-redundant information related to said connection and transmitted over the packet network is processed on the edges of the packet network.

16. A transmitting arrangement (810) for transmitting data over packet network, which comprises
- means (811) for receiving data in telephony network format and
- means (815) for sending data in packet format, **characterized** in that it further comprises
- means (812) for separating frames that carry, for enabling tandem free operation, coded data and signalling information related to the coding from the received data,
- means (813) for extracting data from said frames and

- means (814) for encapsulating the extracted data into packet protocol packets.

17. A receiving arrangement (811) for transmitting data over packet network, which comprises
- means (815) for receiving data in packet format and
- means (824) for sending data in telephony network format, **characterized** in that it further comprises
- means (821) for extracting certain information from the received data, which information comprises coded data and signalling information related to the coded data, and
- means for processing the extracted information comprising one of the following: means (822) for constructing frames that carry, for enabling tandem free operation, said coded data and said signalling information, means (823) for constructing decoded data from said coded data.

18. A gateway (804, 805), which comprises
- means (815) for receiving and sending data in packet format and
- means (811, 824) for receiving and sending data in telephony network format, **characterized** in that it further comprises
- means (812) for separating frames that carry, for enabling tandem free operation, coded data and signalling information related to the coding from the received telephony data,
- means (813) for extracting data from said frames,
- means (814) for encapsulating the extracted data into packet protocol packets,
- means (821) for extracting certain information from the received packet data, which information comprises coded data and signalling information related to the coded data, and
- means for processing the extracted information comprising one of the following: means (822) for constructing frames that carry, for enabling tandem free operation, said coded data and said signalling information, means (823) for constructing decoded data from said coded data.

19. A gateway according to claim 18, **characterized** in that it comprises said means (823) for constructing decoded data and said means (822) for constructing frames that carry said coded data and said signalling information.

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INTERNATIONAL APPLICATIONS
MERGER

The applicant of the PCT-applications listed below has changed. Nokia has merged its Finnish subsidiaries. As a result, **Nokia Mobile Phones Ltd.** and **Nokia Networks Oy** are now part of **Nokia Corporation**. The previous applicants should thereby be deleted and replaced by the following:

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The applications concerned are:

Nokia Mobile Phones Ltd.:

Application:	Our ref:	Next deadline:
PCT/FI99/00722	OP0328	1 December 2001 (30 months)
PCT/FI00/00519	49807	10 December 2001 (30 months)
PCT/FI00/00529	50113	14 December 2001 (30 months)
PCT/FI00/00538	50115	16 December 2001 (30 months)
PCT/FI00/00620	50242	9 January 2002 (30 months)
PCT/FI00/00591	50236	19 January 2002 (30 months)
PCT/FI00/00652	BP100052	19 January 2002 (30 months)
PCT/FI01/00745	BP102211	25 March 2002 (Demand)
PCT/FI00/00863	BP100067	8 April 2002 (30 months)
PCT/FI00/00917	BP100182	25 April 2002 (30 months)
PCT/FI00/00920	BP100180	26 April 2002 (30 months)
PCT/FI00/00919	BP100181	26 April 2002 (30 months)
PCT/FI00/00955	BP100396	2 May 2002 (30 months)
PCT/FI00/01037	BP100397	30 May 2002 (30 months)
PCT/FI00/01087	BP100573	15 June 2002 (30 months)
PCT/FI00/01088	BP100572	15 June 2002 (30 months)
PCT/FI00/01152	BP100574	28 June 2002 (30 months)
PCT/FI00/01163	BP100884	30 June 2002 (30 months)

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PCT/FI01/00016	BP100778	10 July 2002 (30 months)
PCT/FI01/00023	BP100715	13 July 2002 (30 months)
PCT/FI01/00044	BP100519	21 July 2002 (30 months)
PCT/FI01/00093	BP100825	1 August 2002 (30 months)
PCT/FI01/00152	BP100546	16 August 2002 (30 months)
PCT/FI01/00183	BP100945	23 August 2002 (30 months)
PCT/FI01/00189	BP100948	24 August 2002 (30 months)
PCT/FI01/00190	BP101049	25 August 2002 (30 months)
PCT/FI01/00222	BP101116	7 September 2002 (30 months)
PCT/FI01/00325	BP101468	4 October 2002 (30 months)
PCT/FI01/00353	BP101149	10 October 2002 (30 months)
PCT/FI01/00369	BP101515	13 October 2002 (30 months)
PCT/FI01/00436	BP101421	8 November 2002 (30 months)
PCT/FI01/00438	BP101639	8 November 2002 (30 months)

Nokia Networks Oy:

Application:	Our ref:	Next deadline:
PCT/FI00/00555	50063	21 December 2001 (30 months)
PCT/FI00/00561	50192	24 December 2001 (30 months)
PCT/FI00/00615	50245	5 January 2002 (30 months)
PCT/FI00/00621	50193	9 January 2002 (30 months)
PCT/FI00/00622	50064	9 January 2002 (30 months)
PCT/FI00/00647	50194	14 January 2002 (30 months)
PCT/FI00/00654	50215	19 January 2002 (30 months)
PCT/FI00/00657	BP100021	23 January 2002 (30 months)
PCT/FI01/00599	BP101833	26 January 2002 (Demand)
PCT/FI00/00776	BP100158	16 March 2002 (30 months)
PCT/FI00/00736	BP100427	17 March 2002 (30 months)
PCT/FI00/00796	BP100152	20 March 2002 (30 months)
PCT/FI01/00734	BP101514	22 March 2002 (Demand)
PCT/FI01/00776	BP101753	7 April 2002 (Demand)
PCT/FI00/00869	BP100178	8 April 2002 (30 months)
PCT/FI00/00909	BP100167	20 April 2002 (30 months)
PCT/FI00/01021	BP100719	26 May 2002 (30 months)
PCT/FI00/01024	BP100582	26 May 2002 (30 months)
PCT/FI00/01117	BP100581	20 June 2002 (30 months)
PCT/FI01/00014	BP100868	7 July 2002 (30 months)
PCT/FI01/00018	BP100734	11 July 2002 (30 months)
PCT/FI01/00033	BP100244	17 July 2002 (30 months)
PCT/FI01/00120	BP100777	11 August 2002 (30 months)
PCT/FI01/00261	BP100682	16 September 2002 (30 months)
PCT/FI01/00508	BP101224	29 November 2002 (30 months)

The change applies to all designated states except the U.S.

Berggren

Nokia Corporation has authorized Berggren Oy Ab, Jaakonkatu 3A, FIN-00100 Helsinki, Finland, to continue to act as their agents in the above applications.

We enclose a copy of a general power of attorney and a copy of the Extract from the Trade Register in Finnish and its translation into English.

We respectfully request that the change of the applicant is recorded as soon as possible.

BERGGREN OY AB

Encl. Copy of general power of attorney
Copy of Extract from the Trade Register in Finnish
Copy of Extract from the Trade Register, English translation

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30 October 2001

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Our ref: 50064/SKU/PKK

INTERNATIONAL PATENT APPLICATION PCT/FI00/00622
APPLICANT: NOKIA NETWORKS OY

In response to the inofficial communication by telephone with the Examiner, amended claims are filed and the following is respectfully represented.

The enclosed claims 1-19 replace the claims currently on file. The original claim 20 is cancelled.

In the enclosed claims, the tandem free operation data frames are specified more clearly. In addition, it is stated in Claim 1 that the non-redundant information, which includes TFO inband signaling information, is extracted from the frames in a gateway.

Support for these amendments can be found at least on page 3, rows 2-4; page 9, rows 4-6; page 13, rows 1-6 and in Figures 2 and 8.

Document D1 does not disclose processing of tandem free operation frames, nor does it disclose a gateway connecting a cellular network to a packet network.

Document D2 discloses an enhanced internetworking function 14. It is stated (page 7, rows 29-30) that voice frames are directly mapped to a corresponding Voice-over-IP protocol. Voice-over-IP protocol, or H.323 protocol, is not able to support TFO functionality, as H.323 format does not allow transmission of inband signalling.

Document D3 discusses tandem free operation. In D3 the basic idea is that no decoding is done in the TRAU. The TRAU is either put in transparent mode or it is bypassed altogether (page 6, rows 10-12). The solution disclosed in D3 thus requires modifications to the cellular network.

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As discussed in the response to the Written Opinion, the present invention does not affect the operation of the cellular network; no modifications to the cellular network elements are required for supporting tandem free operation over a packet network.

The object of the invention, i.e. to present a solution for supporting tandem free operation over packet network, is achieved by processing TFO frames in a gateway, by extracting TFO inband signaling from the structure of these frames in the gateway and then transmitting the TFO inband signaling and coded speech over the packet network.

We respectfully argue that these features are not disclosed in prior art documents and the claimed invention is novel and inventive.

The description is brought into conformity with the enclosed claims. Replacement pages 4, 5 and 5a are enclosed.

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Sirpa Kuisma
Patent Attorney

Encls. - Replacement pages 4, 5, 5a, 15-18

for a network element connecting a cellular network and a packet network and relaying calls and other connnections to and from the cellular network.

The problem in using compression in gateways when transmitting calls between cellular networks is that in the worst case the speech (or other data) is coded and decoded three times. First in the originating cellular network, then when transmitted between the cellular networks and finally in the destination cellular network. This may recude the quality of the speech drastically.

A futher problem is that even in a case, where both TRAU units involved in a call are TFO capable, it is possible that this feature cannot be utilized. This is because the TFO TRAU frames, which carry information about the speech codecs and TFO capabilities of the TRAUs and which are possible included in the PCM signal, do not necessarily stay unmodified in the compression and decompression in the gateways. Especially the TFO signalling, which is carried in certain bits of the TFO TRAU frame, is sensitive to change due to compression.

The object of the invention is to present a straightforward data transmission method that supports tandem free operation over packet networks. A further object is that the data flow to be transmitted over the packet network is smaller than the data flow coming from the cellular network. Even a further object is that the method for transmitting calls over packet networks is transparent to the cellular networks.

The objects of the invention are achieved by transmitting in the uplink direction over the packet network all non-redundant information from the frames that carry coded data.

A method according to the invention is a method for transmitting data over packet network, where a cellular network is connected to a packet network and uplink tandem free operation data frames, which carry coded data and in the frame structure inband tandem free operation signalling information related to the coding, are transmitted from the cellular network towards the packet network, and it is characterized in that at least all non-redundant information, said non-redundant information comprising said inband tandem free operation signalling information, from the uplink tandem free operation data frames is extracted from said frames in a gateway connecting the cellular network to the packet network and transmitted over the packet network.

A transmitting arrangement according to the invention is an arrangement for transmitting data over packet network, which comprises

- means for receiving data in telephony network format and
- means for sending data in packet format, and it is characterized in that it further comprises
- means for separating tandem free operation frames, which carry coded data and inband tandem free operation signalling information related to the coding, from the received data,
- means for extracting data from said frames, said means arranged to extract at least said tandem free operation signalling information, and
- means for encapsulating the extracted data into packet protocol packets.

A receiving arrangement according to the invention is an arrangement for transmitting data over packet network, which comprises
- means for receiving data in packet format and
- means for sending data in telephony network format, and it is characterized in that it further comprises
- means for extracting certain information from the received data, which information comprises coded data and tandem free operation signalling information related to the coding and
- means for processing the extracted information.

The means for processing the extracted information comprise either means for constructing decoded data from said coded data or means for constructing tandem free operation frames, which carry said coded data and, as inband signalling, said tandem free operation signalling information.

The invention relates also to a gateway, which comprises
- means for receiving and sending data in packet format and
- means for receiving and sending data in telephony network format, and which is characterized in that it further comprises
- means for separating tandem free operation frames, which carry coded data and inband tandem free operation signalling information related to the coding, from the received telephony data,
- means for extracting data from said frames,
- means for encapsulating the extracted data into packet protocol packets,
- means for extracting certain information from the received packet data, which information comprises coded data and tandem free operation signalling information related to the coding and
- means for processing the extracted information.

The means for processing the extracted information comprise either means for constructing decoded data from said coded data or means for constructing tandem free operation frames, which carry said coded data and, as inband signalling, said tandem free operation signalling information.

In a method according to the invention, a cellular network is connected to a packet network, for example with a gateway. Usually the gateways that connect telephony networks to packet networks compress the speech flow. In a method according to

Claims

1. A method for transmitting data over packet network, where a cellular network is connected to a packet network and uplink tandem free operation data frames, which carry coded data and in the frame structure inband tandem free operation signalling information related to the coding, are transmitted (112) from the cellular network towards the packet network, **characterized** in that at least all non-redundant information, said non-redundant information comprising said inband tandem free operation signalling information, from the uplink tandem free operation data frames is extracted (311, 511, 611, 711) from said frames in a gateway connecting the cellular network to the packet network and transmitted over the packet network.

2. A method according to claim 1, **characterized** in that the uplink tandem free operation data frames are relayed (511) as such.

3. A method according to claim 2, **characterized** in that each uplink tandem free operation data frame is relayed (512) in a packet of a certain packet protocol and that only one uplink data frame related to a certain connection is carried in each packet.

4. A method according to claim 2, **characterized** in that the uplink tandem free operation data frames are divided (611) into parts and each part is transmitted in a packet of a certain packet protocol and that only one part related to a certain connection is carried (612) in each packet

5. A method according to claim 2, **characterized** in that uplink tandem free operation data frames or parts of the uplink tandem free operation data frames related to more than one connection are carried (612) in each packet.

6. A method according to claim 1, **characterized** in that the coded data from the uplink tandem free operation data frames is extracted (711) and transmitted over a first packet data connection and the tandem free operation signalling information from the uplink tandem free operation data frames is extracted (711) and transmitted over a second packet data connection.

7. A method according to claim 6, **characterized** in that said tandem free operation signalling information is extracted and transmitted over a certain packet data connection that confirms the delivery of packets.

8. A method according to claim 7, **characterized** in that said tandem free operation signalling information is transmitted using Transfer Control Protocol.

9. A method according to claim 7, **characterized** in that said tandem free operation signalling information is transmitted using RTP Control Protocol.

10. A method according to claim 1, **characterized** in that the non-redundant data from the uplink tandem free operation data frames is transmitted using a certain protocol that supports real time applications.

11. A method according to claim 10, **characterized** in that the non-redundant data is transmitted using Real-time Transfer Protocol.

12. A method according to claim 1, **characterized** in that the information transmitted over the packet network is processed on the edge of the packet network.

13. A method according to claim 12, **characterized** in that the coded data, which is part of the non-redundant information transmitted over the packet network, is decoded on the edge of the packet network.

14. A method according to claim 12, **characterized** in that downlink tandem free operation frames, which carry said coded data and, as inband signalling in the frame structure, said tandem free operation signalling information, are constructed on the edge of the packet network from the non-redundant information transmitted over the packet network.

15. A method according to claim 12, **characterized** in that
- a second cellular network is connected to the packet network,
- second uplink tandem free operation data frames, which carrycoded data and inband tandem free operation signalling information related to the coding, are transmitted from the second cellular network towards the packet network,
- the uplink tandem free operation data frames and the second uplink tandem free operation data frames are related to a certain bidirectional connection,
- at least all non-redundant information, said non-redundant information comprising said inband tandem free operation signalling information, from the second tandem free operation uplink data frames is extracted from said second uplink tandem free operation data frames and transmitted over the packet network and
- all non-redundant information related to said connection and transmitted over the packet network is processed on the edges of the packet network.

16. A transmitting arrangement (810) for transmitting data over packet network, which comprises
- means (811) for receiving data in telephony network format and
- means (815) for sending data in packet format,
characterized in that it further comprises
- means (812) for separating tandem free operation frames, which carry coded data and inband tandem free operation signalling information related to the coding, from the received data,
- means (813) for extracting data from said frames, said means arranged to extract at least said tandem free operation signalling information, and
- means (814) for encapsulating the extracted data into packet protocol packets.

17. A receiving arrangement (811) for transmitting data over packet network, which comprises
- means (815) for receiving data in packet format and
- means (824) for sending data in telephony network format,
characterized in that it further comprises
- means (821) for extracting certain information from the received data, which information comprises coded data and tandem free operation signalling information related to the coded data, and
- means for processing the extracted information comprising one of the following: means (822) for constructing tandem free operation frames, which carrysaid coded data and, as inband signalling, said tandem free operation signalling information, means (823) for constructing decoded data from said coded data.

18. A gateway (804, 805), which comprises
- means (815) for receiving and sending data in packet format and
- means (811, 824) for receiving and sending data in telephony network format, **characterized** in that it further comprises
- means (812) for separating tandem free operation frames, which carry coded data and inband tandem free operation signalling information related to the coding, from the received telephony data,
- means (813) for extracting data from said frames,
- means (814) for encapsulating the extracted data into packet protocol packets,
- means (821) for extracting certain information from the received packet data, which information comprises coded data and tandem free operation signalling information related to the coded data, and

- means for processing the extracted information comprising one of the following: means (822) for constructing tandem free operation frames, which carry said coded data and said tandem free operation signalling information as inband signalling, means (823) for constructing decoded data from said coded data.

19. A gateway according to claim 18, **characterized** in that it comprises said means (823) for constructing decoded data and said means (822) for constructing tandem free operation frames, which carry said coded data and, as inband signalling, said tandem free operation signalling information.

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

BERGGREN OY AB
P.O. Box 16
FIN-00101 Helsinki
FINLANDE

Berggren Oy Ab
21 -11- 2001
Stolmr

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Rule 71.1)

Date of mailing *(day/month/year)*	16.11.2001
Applicant's or agent's file reference 50064/SKU/PKK	**IMPORTANT NOTIFICATION**

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/FI00/00622	06/07/2000	09/07/1999

Applicant
NOKIA NETWORKS OY et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/	Authorized officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Finnie, A Tel.+49 89 2399-8251

Form PCT/IPEA/416 (July 1992)

PATENT COOPERATION TREATY

PCT

14

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
50064/SKU/PKK		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/FI00/00622	06/07/2000	09/07/1999
International Patent Classification (IPC) or national classification and IPC H04Q7/00		
Applicant NOKIA NETWORKS OY et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 7 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☒ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☒ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
06/02/2001	16.11.2001
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Jaskolski, J Telephone No. +49 89 2399 7567

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/FI00/00622

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:
Description, pages:

1-3,6-14	as originally filed			
4,5,5a	as received on	30/10/2001	with letter of	30/10/2001

Claims, No.:

1-19	as received on	30/10/2001	with letter of	30/10/2001

Drawings, sheets:

1/5-5/5	as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   - ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
   - ☐ the language of publication of the international application (under Rule 48.3(b)).
   - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   - ☐ contained in the international application in written form.
   - ☐ filed together with the international application in computer readable form.
   - ☐ furnished subsequently to this Authority in written form.
   - ☐ furnished subsequently to this Authority in computer readable form.
   - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
   - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

☐ the description, pages:

☒ the claims, Nos.: 20

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-19
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-19
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-19
	No:	Claims	

2. Citations and explanations
see separate sheet

VI. Certain documents cited

1. Certain published documents (Rule 70.10)

and / or

2. Non-written disclosures (Rule 70.9)

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Reference is made to the following documents:

D1: WO 99 31911 A (ERICSSON TELEFON AB L M) 24 June 1999 (1999-06-24)

D2: WO 00 54529 A (ERICSSON TELEFON AB L M) 14 September 2000 (2000-09-14)

Re Item V

1. The application as per the preamble of claim 1 relates to a method for transmitting data over packet network, where a cellular network is connected to a packet network and uplink tandem free operation data frames, which carry coded data and in the frame structure inband tandem free operation signalling information related to the coding, are transmitted from the cellular network towards the packet network.

   Methods of transmitting data over packet network, where a cellular network is connected to a packet network and uplink data frames, which carry coded data and signalling information related to the coding, are transmitted from the cellular network towards the packet network, are known in the art, and in particular from document D1, which forms the closest prior art.
   Document D1 discloses a method for performing data communications between a cellular network and a packet network. Data frames carrying coded data and signalling information related to the coding are transmitted between both types of networks. Document D1 discloses in particular a gateway connecting both types of networks in which gateway internetworking operations are performed. Especially the gateway generates and processes signalling information related to the transmission of coded data.

   The method of claim 1 differs from that disclosed in D1 in that:
   a) data frames are tandem free operation data frames
   b) in the frame structure inband tandem free operation signalling information is comprised
   c) non-redundant information comprising the inband tandem free operation signalling information is extracted from the uplink tandem free operation data

frames and transmitted over the packet network.
d) extraction of the non-redundant information comprising the inband tandem free operation signalling information is performed in a gateway connecting the cellular network to the packet network.

The subject-matter of claim 1 is therefore new, Article 33(1) and (2) PCT.

Feature a) is not considered to involve an inventive step, because the method of D1 is applicable to any type of data frames, and the particular implementation of specific tandem free operation data frames would be within normal practice of a skilled person.
Feature b) is not considered to involve an inventive step, because it is an intrinsic feature of tandem free operation data frames, known to a skilled person.
Feature d) is not considered to involve an inventive step because the method of D1 discloses a gateway connecting the cellular network to the packet network in which gateway internetworking operations on data is performed. It would be therefore obvious for a skilled person to perform internetworking operations related to tandem free operation data frames also in this gateway.

The claimed method, in particular this part of the feature c) that the inband tandem free operation signalling information is extracted from the uplink tandem free operation data frames and transmitted over the packet network, is neither taught, nor rendered obvious, alone or in combination, by the prior art documents acknowledged in the description or cited in the International Search Report.
The subject-matter of claim 1 is therefore considered to involve the required inventive step, Article 33(1) and (3) PCT. The subject-matter of claim 1 is also industrially applicable.

2. Independent **claims 16, 17 and 18** define a transmitting arrangeent, a receiving arrangement and a gateway respectively, corresponding to the method of claim 1. Therefore the subject-matter of claims 16, 17 and 18 equally meets the requirements of Article 33 PCT.

3. Dependent **claims 2 to 15 and 19** (see clarity objections to claims 15, 17 and 19 in section VIII) relate to further implementation details of the method and the

apparatuses defined by the independent claims to which they refer and are therefore equally novel, inventive and industrially applicable.

Re Item VI

1. Document D2, indicated in the International Search Report as "E" document, discloses a method for performing tandem free operation data communications between a cellular network and a packet network. Tandem free operation data frames carrying coded data and inband signalling information related to the coding are transmitted between both types of networks. Document D2 discloses a gateway connecting both types of networks in which gateway internetworking operations are performed. Tandem free operation data frames are either put in a transparent mode or bypassed altogether.
   Document D2 does not disclose this part of the feature c) of claim 1 (please refer to section V, paragraph 1) that the inband tandem free operation signalling information is extracted from the uplink tandem free operation data frames and transmitted over the packet network.

Re Item VIII

1. Unclear expression "carrysaid" in **claims 15 and 17** has been interpreted as separate words "carry" and "said".

2. It is unclear (Article 6 PCT) why the overall content of **claim 19**, dependent on claim 18, is the repetition of some of the features of claim 18.

for a network element connecting a cellular network and a packet network and relaying calls and other connnections to and from the cellular network.

The problem in using compression in gateways when transmitting calls between cellular networks is that in the worst case the speech (or other data) is coded and decoded three times. First in the originating cellular network, then when transmitted between the cellular networks and finally in the destination cellular network. This may recude the quality of the speech drastically.

A futher problem is that even in a case, where both TRAU units involved in a call are TFO capable, it is possible that this feature cannot be utilized. This is because the TFO TRAU frames, which carry information about the speech codecs and TFO capabilities of the TRAUs and which are possible included in the PCM signal, do not necessarily stay unmodified in the compression and decompression in the gateways. Especially the TFO signalling, which is carried in certain bits of the TFO TRAU frame, is sensitive to change due to compression.

The object of the invention is to present a straightforward data transmission method that supports tandem free operation over packet networks. A further object is that the data flow to be transmitted over the packet network is smaller than the data flow coming from the cellular network. Even a further object is that the method for transmitting calls over packet networks is transparent to the cellular networks.

The objects of the invention are achieved by transmitting in the uplink direction over the packet network all non-redundant information from the frames that carry coded data.

A method according to the invention is a method for transmitting data over packet network, where a cellular network is connected to a packet network and uplink data frames which carry coded data and certain signalling information related to the coding is transmitted from the cellular network towards the packet network, and it is characterized in that at least all non-redundant information from the uplink data frames is extracted from said frames and transmitted over the packet network.

A transmitting arrangement according to the invention is an arrangement for transmitting data over packet network, which comprises
- means for receiving data in telephony network format and
- means for sending data in packet format, and it is characterized in that it further comprises

- means for separating the frames that carry coded data and certain signalling information related to the coding from the received data,
- means for extracting data from said frames and
- means for encapsulating the extracted data into packet protocol packets.

A receiving arrangement according to the invention is an arrangement for transmitting data over packet network, which comprises
- means for receiving data in packet format and
- means for sending data in telephony network format, and it is characterized in that it further comprises
- means for extracting certain information from the received data, which information comprises certain coded data and certain signalling information related to the coding and
- means for processing the extracted information.

The means for processing the extracted information comprise either means for constructing decoded data from said coded data or means for constructing frames that carry said coded data and said signalling information.

The invention relates also to a gateway, which comprises
- means for receiving and sending data in packet format and
- means for receiving and sending data in telephony network format, and which is characterized in that it further comprises
- means for separating the frames that carry coded data and certain signalling information related to the coding from the received telephony data,
- means for extracting data from said frames,
- means for encapsulating the extracted data into packet protocol packets,
- means for extracting certain information from the received packet data, which information comprises coded data and certain signalling information related to the coding and
- means for processing the extracted information.

The means for processing the extracted information comprise either means for constructing decoded data from said coded data or means for constructing frames that carry said coded data and said signalling information.

In a method according to the invention, a cellular network is connected to a packet network, for example with a gateway. Usually the gateways that connect telephony networks to packet networks compress the speech flow. In a method according to

Claims

1. A method for transmitting data over packet network, where a cellular network is connected to a packet network and uplink data frames which carry coded data and certain signalling information related to the coding are transmitted (112) from the cellular network towards the packet network, characterized in that at least all non-redundant information from the uplink data frames is extracted (311, 511, 611, 711) from said frames and transmitted over the packet network.

2. A method according to claim 1, characterized in that the uplink data frames are relayed (511) as such.

3. A method according to claim 2, characterized in that each uplink data frame is relayed (512) in a packet of a certain packet protocol and that only one uplink data frame related to a certain connection is carried in each packet.

4. A method according to claim 2, characterized in that the uplink data frames are divided (611) into parts and each part is transmitted in a packet of a certain packet protocol and that only one part related to a certain connection is carried (612) in each packet

5. A method according to claim 2, characterized in that uplink data frames or parts of the uplink data frames related to more than one connection are carried (612) in each packet.

6. A method according to claim 1, characterized in that certain information from the uplink data frames is extracted (711) and transmitted over a separate packet data connection.

7. A method according to claim 6, characterized in that said signalling information is extracted and transmitted over a certain packet data connection that confirms the delivery of packets.

8. A method according to claim 7, characterized in that said signalling information is transmitted using Transfer Control Protocol.

9. A method according to claim 7, characterized in that said signalling information is transmitted using RTP Control Protocol.

10. A method according to claim 6, characterized in that said coded data is extracted (711) and transmitted over a certain packet data connection.

11. A method according to claim 1, **characterized** in that the non-redundant data from the uplink data frames is transmitted using a certain protocol that supports real time applications.

12. A method according to claim 11, **characterized** in that the non-redundant data is transmitted using Real-time Transfer Protocol.

13. A method according to claim 1, **characterized** in that the information transmitted over the packet network is processed on the edge of the packet network.

14. A method according to claim 13, **characterized** in that the coded data, which is part of the non-redundant information transmitted over the packet network, is decoded on the edge of the packet network.

15. A method according to claim 13, **characterized** in that frames, which carry said coded data and said signalling information, are constructed on the edge of the packet network from the non-redundant information transmitted over the packet network.

16. A method according to claim 13, where
- a second cellular network is connected to the packet network,
- second uplink data frames which carry coded data and certain signalling information related to the coding are transmitted from the second cellular network towards the packet network and
- the uplink data frames and the second uplink data frames are related to a certain bidirectional connection, **characterized** in that
- at least all non-redundant information from the second uplink data frames is extracted from said second uplink data frames and transmitted over the packet network and
- all non-redundant information related to said connection and transmitted over the packet network is processed on the edges of the packet network.

17. A transmitting arrangement (810) for transmitting data over packet network, which comprises
- means (811) for receiving data in telephony network format and
- means (815) for sending data in packet format, **characterized** in that it further comprises
- means (812) for separating the frames that carry coded data and certain signalling information related to the coding from the received data,
- means (813) for extracting data from said frames and

- means (814) for encapsulating the extracted data into packet protocol packets.

18. A receiving arrangement (811) for transmitting data over packet network, which comprises
- means (815) for receiving data in packet format and
- means (824) for sending data in telephony network format, **characterized** in that it further comprises
- means (821) for extracting certain information from the received data, which information comprises coded data and signalling information related to the coded data, and
- means for processing the extracted information comprising one of the following: means (822) for constructing frames that said carry coded data and said signalling information, means (823) for constructing decoded data from said coded data.

19. A gateway (804, 805), which comprises
- means (815) for receiving and sending data in packet format and
- means (811, 824) for receiving and sending data in telephony network format, **characterized** in that it further comprises
- means (812) for separating the frames that carry coded data and certain signalling information related to the coding from the received telephony data,
- means (813) for extracting data from said frames,
- means (814) for encapsulating the extracted data into packet protocol packets,
- means (821) for extracting certain information from the received packet data, which information comprises coded data and signalling information related to the coded data, and
- means for processing the extracted information comprising one of the following: means (822) for constructing frames that said carry coded data and said signalling information, means (823) for constructing decoded data from said coded data.

20. A gateway according to claim 19, **characterized** in that it further comprises both means (823) for constructing decoded data and means (822) for constructing frames that carry said coded data and said signalling information.

for a network element connecting a cellular network and a packet network and relaying calls and other connnections to and from the cellular network.

The problem in using compression in gateways when transmitting calls between cellular networks is that in the worst case the speech (or other data) is coded and decoded three times. First in the originating cellular network, then when transmitted between the cellular networks and finally in the destination cellular network. This may recude the quality of the speech drastically.

A futher problem is that even in a case, where both TRAU units involved in a call are TFO capable, it is possible that this feature cannot be utilized. This is because the TFO TRAU frames, which carry information about the speech codecs and TFO capabilities of the TRAUs and which are possible included in the PCM signal, do not necessarily stay unmodified in the compression and decompression in the gateways. Especially the TFO signalling, which is carried in certain bits of the TFO TRAU frame, is sensitive to change due to compression.

The object of the invention is to present a straightforward data transmission method that supports tandem free operation over packet networks. A further object is that the data flow to be transmitted over the packet network is smaller than the data flow coming from the cellular network. Even a further object is that the method for transmitting calls over packet networks is transparent to the cellular networks.

The objects of the invention are achieved by transmitting in the uplink direction over the packet network all non-redundant information from the frames that carry coded data.

A method according to the invention is a method for transmitting data over packet network, where a cellular network is connected to a packet network and uplink tandem free operation data frames, which carry coded data and in the frame structure inband tandem free operation signalling information related to the coding, are transmitted from the cellular network towards the packet network, and it is characterized in that at least all non-redundant information, said non-redundant information comprising said inband tandem free operation signalling information, from the uplink tandem free operation data frames is extracted from said frames in a gateway connecting the cellular network to the packet network and transmitted over the packet network.

A transmitting arrangement according to the invention is an arrangement for transmitting data over packet network, which comprises

- means for receiving data in telephony network format and
- means for sending data in packet format, and it is characterized in that it further comprises
- means for separating tandem free operation frames, which carry coded data and inband tandem free operation signalling information related to the coding, from the received data,
- means for extracting data from said frames, said means arranged to extract at least said tandem free operation signalling information, and
- means for encapsulating the extracted data into packet protocol packets.

A receiving arrangement according to the invention is an arrangement for transmitting data over packet network, which comprises
- means for receiving data in packet format and
- means for sending data in telephony network format, and it is characterized in that it further comprises
- means for extracting certain information from the received data, which information comprises coded data and tandem free operation signalling information related to the coding and
- means for processing the extracted information.

The means for processing the extracted information comprise either means for constructing decoded data from said coded data or means for constructing tandem free operation frames, which carry said coded data and, as inband signalling, said tandem free operation signalling information.

The invention relates also to a gateway, which comprises
- means for receiving and sending data in packet format and
- means for receiving and sending data in telephony network format, and which is characterized in that it further comprises
- means for separating tandem free operation frames, which carry coded data and inband tandem free operation signalling information related to the coding, from the received telephony data,
- means for extracting data from said frames,
- means for encapsulating the extracted data into packet protocol packets,
- means for extracting certain information from the received packet data, which information comprises coded data and tandem free operation signalling information related to the coding and
- means for processing the extracted information.

The means for processing the extracted information comprise either means for constructing decoded data from said coded data or means for constructing tandem free operation frames, which carry said coded data and, as inband signalling, said tandem free operation signalling information.

In a method according to the invention, a cellular network is connected to a packet network, for example with a gateway. Usually the gateways that connect telephony networks to packet networks compress the speech flow. In a method according to

Claims

1. A method for transmitting data over packet network, where a cellular network is connected to a packet network and uplink tandem free operation data frames, which carry coded data and in the frame structure inband tandem free operation signalling information related to the coding, are transmitted (112) from the cellular network towards the packet network, **characterized** in that at least all non-redundant information, said non-redundant information comprising said inband tandem free operation signalling information, from the uplink tandem free operation data frames is extracted (311, 511, 611, 711) from said frames in a gateway connecting the cellular network to the packet network and transmitted over the packet network.

2. A method according to claim 1, **characterized** in that the uplink tandem free operation data frames are relayed (511) as such.

3. A method according to claim 2, **characterized** in that each uplink tandem free operation data frame is relayed (512) in a packet of a certain packet protocol and that only one uplink data frame related to a certain connection is carried in each packet.

4. A method according to claim 2, **characterized** in that the uplink tandem free operation data frames are divided (611) into parts and each part is transmitted in a packet of a certain packet protocol and that only one part related to a certain connection is carried (612) in each packet.

5. A method according to claim 2, **characterized** in that uplink tandem free operation data frames or parts of the uplink tandem free operation data frames related to more than one connection are carried (612) in each packet.

6. A method according to claim 1, **characterized** in that the coded data from the uplink tandem free operation data frames is extracted (711) and transmitted over a first packet data connection and the tandem free operation signalling information from the uplink tandem free operation data frames is extracted (711) and transmitted over a second packet data connection.

7. A method according to claim 6, **characterized** in that said tandem free operation signalling information is extracted and transmitted over a certain packet data connection that confirms the delivery of packets.

8. A method according to claim 7, **characterized** in that said tandem free operation signalling information is transmitted using Transfer Control Protocol.

9. A method according to claim 7, **characterized** in that said tandem free operation signalling information is transmitted using RTP Control Protocol.

10. A method according to claim 1, **characterized** in that the non-redundant data from the uplink tandem free operation data frames is transmitted using a certain protocol that supports real time applications.

11. A method according to claim 10, **characterized** in that the non-redundant data is transmitted using Real-time Transfer Protocol.

12. A method according to claim 1, **characterized** in that the information transmitted over the packet network is processed on the edge of the packet network.

13. A method according to claim 12, **characterized** in that the coded data, which is part of the non-redundant information transmitted over the packet network, is decoded on the edge of the packet network.

14. A method according to claim 12, **characterized** in that downlink tandem free operation frames, which carry said coded data and, as inband signalling in the frame structure, said tandem free operation signalling information, are constructed on the edge of the packet network from the non-redundant information transmitted over the packet network.

15. A method according to claim 12, **characterized** in that
- a second cellular network is connected to the packet network,
- second uplink tandem free operation data frames, which carrycoded data and inband tandem free operation signalling information related to the coding, are transmitted from the second cellular network towards the packet network,
- the uplink tandem free operation data frames and the second uplink tandem free operation data frames are related to a certain bidirectional connection,
- at least all non-redundant information, said non-redundant information comprising said inband tandem free operation signalling information, from the second tandem free operation uplink data frames is extracted from said second uplink tandem free operation data frames and transmitted over the packet network and
- all non-redundant information related to said connection and transmitted over the packet network is processed on the edges of the packet network.

16. A transmitting arrangement (810) for transmitting data over packet network, which comprises
- means (811) for receiving data in telephony network format and
- means (815) for sending data in packet format,
characterized in that it further comprises
- means (812) for separating tandem free operation frames, which carry coded data and inband tandem free operation signalling information related to the coding, from the received data,
- means (813) for extracting data from said frames, said means arranged to extract at least said tandem free operation signalling information, and
- means (814) for encapsulating the extracted data into packet protocol packets.

17. A receiving arrangement (811) for transmitting data over packet network, which comprises
- means (815) for receiving data in packet format and
- means (824) for sending data in telephony network format,
characterized in that it further comprises
- means (821) for extracting certain information from the received data, which information comprises coded data and tandem free operation signalling information related to the coded data, and
- means for processing the extracted information comprising one of the following: means (822) for constructing tandem free operation frames, which carry said coded data and, as inband signalling, said tandem free operation signalling information, means (823) for constructing decoded data from said coded data.

18. A gateway (804, 805), which comprises
- means (815) for receiving and sending data in packet format and
- means (811, 824) for receiving and sending data in telephony network format, characterized in that it further comprises
- means (812) for separating tandem free operation frames, which carry coded data and inband tandem free operation signalling information related to the coding, from the received telephony data,
- means (813) for extracting data from said frames,
- means (814) for encapsulating the extracted data into packet protocol packets,
- means (821) for extracting certain information from the received packet data, which information comprises coded data and tandem free operation signalling information related to the coded data, and

- means for processing the extracted information comprising one of the following: means (822) for constructing tandem free operation frames, which carry said coded data and said tandem free operation signalling information as inband signalling, means (823) for constructing decoded data from said coded data.

19. A gateway according to claim 18, **characterized** in that it comprises said means (823) for constructing decoded data and said means (822) for constructing tandem free operation frames, which carry said coded data and, as inband signalling, said tandem free operation signalling information.

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

BERGGREN OY AB
P.O. Box 16
FIN-00101 Helsinki
FINLANDE

Berggren Oy Ab
18 -10- 2001
SKU/PKK

PCT

NOTIFICATION CONCERNING INFORMAL COMMUNICATIONS WITH THE APPLICANT

(PCT Rule 66.6)

	Date of mailing *(day/month/year)* 16.10.2001
Applicant's or agent's file reference 50064/SKU/PKK	**TRANSMITTAL FOR INFORMATION**
International application no. PCT/FI00/00622	International filing date *(day/month/year)* 06/07/2000
Applicant NOKIA NETWORKS OY et al.	

An informal communication took place on 10/10/2001, between the International Preliminary Examining Authority and the applicant / the agent.

A copy of the note on that communication (Form PCT/IPEA/428) is herewith transmitted for your information.

Name and mailing address of the international preliminary examining authority European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Finnie, A Telephone No. +49 89 2399-8251

Form PCT/IPEA/429 (july 1993)

Vertrag über die internationale Zusammenarbeit auf dem Gebiet des Patentwesens
Patent Cooperation Tr
Traité de coopération en matière de brevets

PCT

Application No.: PCT/FI00/00622

Note on an informal communication by telephone with the Applicant

A copy of this note is being sent to the Applicant for information

Participants

Agent: Sirpa Kuisma

Examiner(s): Jaskolski, J

Summary of the communication

1. The applicant has been invited to confirm, due to the effect of renumbering original claims 16-20 into claims 15-19 in the Letter dated 12 July 2001, whenever the original claim 20 should be cancelled.

2. Claim 1, filed with the Letter dated 12 July 2001, differs from the original claim 1 in that the coded data and signalling information in uplink data frames are carried "for enabling tandem free operation". Document D1, WO 99/31911, cited for novelty objection to claim 1 in the Communication dated 17.04.2001, does not disclose that the coded data and signalling information in the uplink data frames are carried for enabling tandem free operation. Thus the novelty objection to claim 1 is no longer maintained.

   However, in the opinion of the examiner, narrowing the scope of claim 1 to data frames suitable for enabling tandem free operation does not fulfill the requirement of inventive step (Article 33(3) PCT).
   The requirements of tandem free operation, disclosed for example in the document WO 00/54529 from the Search Report, on page 2, lines 26-35 and on page 3, lines 22-34, are met in the document D1.
   The method and the system of D1 are able to support Tandem Free Operation, providing a signalling connection based on H.245 protocol (D1, page 20, lines 27-31) and a data connection based on H.323 protocol (D1, page 21, lines 9-11). D1 is suitable to transmit compressed audio data between mobile communication systems (D1, page 6, lines 6-30) and packet networks and solves the same problem of several decompression/compression stages between the networks as in the application.
   The skilled person would therefore easily adapt the disclosure of D1 for enabling

Application No.: PCT/FI00/00622

tandem free operation, arriving at the subject-matter of claim 1 without a need of performing an inventive step.
The same objection of lack of inventive step applies to the rest of independent claims, for the same reasons as in relation to claim 1.

The applicant's arguments from the Letter dated 12 July 2001 that the TRAUs involved in a call negotiate the codec using TFO inband signalling, signalling is inband signalling, and there is no separate signalling connection, are not features of the claims. Contrary, according to claim 6, coded data from the frames is extracted and transmitted over a first packet data connection, and signalling information is extracted and transmitted over a second packet data connection, thus not inband.

The applicant is invited, within three weeks from the date of this telephone conversation, to amend the present set of claims, or to comment on the inventive step objection discussed above. 31/10/01

10/10/2001
.....
Date *(day / month / year)*

Jaskolski, J
.....
Authorized officer of IPEA

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
50064		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/FI 00/00622	06/06/2000	09/07/1999
Applicant		
NOKIA NETWORKS OY		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language,** the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   [ ] the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

   b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

   [ ] contained in the international application in written form.

   [ ] filed together with the international application in computer readable form.

   [ ] furnished subsequently to this Authority in written form.

   [ ] furnished subsequently to this Authority in computer readble form.

   [ ] the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   [ ] the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. [ ] **Certain claims were found unsearchable** (See Box I).

3. [ ] **Unity of invention is lacking** (see Box II).

4. With regard to the **title,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 3

   [X] as suggested by the applicant.

   [ ] because the applicant failed to suggest a figure.

   [ ] because this figure better characterizes the invention.

   [ ] None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/FI 00/00622

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/30 H04L12/64

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99 31911 A (ERICSSON TELEFON AB L M) 24 June 1999 (1999-06-24) page 25, line 10 -page 28, line 24 ---	1-20
E	WO 00 54529 A (ERICSSON TELEFON AB L M) 14 September 2000 (2000-09-14) the whole document ---	1-20
E	WO 00 33590 A (ERICSSON TELEFON AB L M) 8 June 2000 (2000-06-08) abstract page 8, line 14 -page 13, line 22 ---	1-20
A	US 5 608 779 A (KASHEF HOOMAN ET AL) 4 March 1997 (1997-03-04) abstract column 1, line 15 -column 2, line 16 --- -/--	1-20

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 November 2000	05. 02. 2001

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	N. Ayoub

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International Application No
PCT/FI 00/00622

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 99 05830 A (ERICSSON TELEFON AB L M) 4 February 1999 (1999-02-04) abstract page 3, line 30 -page 5, line 17 -----	1-20

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/FI 00/00622

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
WO 9931911	A	24-06-1999	DE	19756191 A	24-06-1999
			AU	2054299 A	05-07-1999
			EP	1040692 A	04-10-2000
WO 0054529	A	14-09-2000	NO	991169 A	11-09-2000
			AU	3686100 A	28-09-2000
WO 0033590	A	08-06-2000	AU	2011000 A	19-06-2000
			AU	2011100 A	19-06-2000
			AU	2011200 A	19-06-2000
			AU	2011300 A	19-06-2000
			WO	0033537 A	08-06-2000
			WO	0033518 A	08-06-2000
			WO	0033523 A	08-06-2000
US 5608779	A	04-03-1997	NONE		
WO 9905830	A	04-02-1999	AU	8363298 A	16-02-1999
			BR	9810781 A	25-07-2000

PATENT COOPERATION TREATY

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
BERGGREN OY AB
P.O. Box 16
FIN-00101 Helsinki
FINLANDE

Berggren Oy Ab
19 -04- 2001

PCT

WRITTEN OPINION

(PCT Rule 66)

Date of mailing *(day/month/year)*	17.04.2001
Applicant's or agent's file reference: 50064/SKU/PKK	**REPLY DUE** **within 3 month(s)** from the above date of mailing 17/7-01

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/FI00/00622	06/07/2000	09/07/1999

International Patent Classification (IPC) or both national classification and IPC
H04Q7/00

Applicant
NOKIA NETWORKS OY et al.

1. This written opinion is the **first** drawn up by this International Preliminary Examining Authority.

2. This opinion contains indications relating to the following items:

I	☒	Basis of the opinion
II	☐	Priority
III	☐	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	☐	Lack of unity of invention
V	☒	Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	☒	Certain document cited
VII	☒	Certain defects in the international application
VIII	☒	Certain observations on the international application

3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 09/11/2001.

Name and mailing address of the international preliminary examining authority:
European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer / Examiner
Jaskolski, J

Formalities officer (incl. extension of time limits)
Pelatti, V
Telephone No. +49 89 2399 7309

I. Basis of the opinion

1. With regard to the **elements** of the international application (Replacement *sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

Description, pages:

1-14 as originally filed

Claims, No.:

1-20 as originally filed

Drawings, sheets:

1/5-5/5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1,2-4,6-8,10,11,13-15,17-20
Inventive step (IS)	Claims	5,9,12,16
Industrial applicability (IA)	Claims	

2. Citations and explanations
see separate sheet

VI. Certain documents cited

1. Certain published documents (Rule 70.10)

and / or

2. Non-written disclosures (Rule 70.9)

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Re Item V

1. Reference is made to the following documents:

   D1: WO 99 31911 A (ERICSSON TELEFON AB L M) 24 June 1999 (1999-06-24)
   D2: WO 99 05830 A (ERICSSON TELEFON AB L M) 4 February 1999 (1999-02-04)
   D3: WO 00 54529 A (ERICSSON TELEFON AB L M) 14 September 2000 (2000-09-14)
   D4: WO 00 33590 A (ERICSSON TELEFON AB L M) 8 June 2000 (2000-06-08)

2. The present application does not meet the requirements of Article 33 PCT, because the subject-matter of independent claim 1 is not new in the sense of Article 33(1) and (2) PCT. The document D1 discloses all the features of this claim (the references in parentheses applying to this document):

   A method for transmitting data over packet network (page 1 lines 10-18), where a cellular network is connected to a packet network (fig. 1) and uplink data frames which carry coded data and certain signalling information related to the coding are transmitted from the cellular network towards the packet network (page 20 lines 17-31), characterized in that at least all non-redundant information from the uplink data frames is extracted from said frames and transmitted over the packet network (page 20 line 34 - page 21 line 11).

   The subject-matter of claim 1 is therefore not new in the sense of Article 33(2) PCT.

3. The present application does not meet the requirements of Article 33 PCT, because the subject-matter of claims 2, 3, 4, 6, 7, 8, 10, 11, 13, 14, 15 is not new in the sense of Article 33(1) and (2) PCT. The document D1 discloses all the features of these claims (the references in parentheses applying to this document):

3.1 for claim 2: A method according to claim 1, characterized in that the uplink data

frames are relayed as such (page 7 lines 11-20 and lines 28-34).

3.2. for claim 3: A method according to claim 2, characterized in that each uplink data frame is relayed in a packet of a certain packet protocol and that only one uplink data frame related to a certain connection is carried in each packet (page 8 lines 1-6).

3.3 for claim 4: A method according to claim 2, characterized in that the uplink data frames are divided into parts and each part is transmitted in a packet of a certain packet protocol and that only one part related to a certain connection is carried in each packet (page 21 lines 10-11 and 28-36).

3.4 for claim 6: A method according to claim 1, characterized in that certain information from the uplink data frames is extracted and transmitted over a separate packet data connection (page 26 lines 30-35).

3.5 for claim 7: A method according to claim 6, characterized in that said signalling information is extracted and transmitted over a certain packet data connection that confirms the delivery of packets (page 26 lines 30-35 and page 31 lines 18-22).

3.6 for claim 8: A method according to claim 7, characterized in that said signalling information is transmitted using Transfer Control Protocol (page 26 lines 30-35 and page 31 lines 18-22).

3.7 for claim 10: A method according to claim 6, characterized in that said coded data is extracted and transmitted over a certain packet data connection (page 26 lines 30-35 and page 31 lines 18-22).

3.8 for claim 11: A method according to claim 1, characterized in that the non-redundant data from the uplink data frames is transmitted using a certain protocol that supports real time applications (page 26 lines 30-35 and page 31 lines 18-22).

3.9 for claim 13: A method according to claim 1, characterized in that the information transmitted over the packet network is processed on the edge of the packet

network (entire page 26).

3.10 for claim 14: A method according to claim 13, characterized in that the coded data, which is part of the non-redundant information transmitted over the packet network, is decoded on the edge of the packet network (page 22 lines 4-17, page 26 lines 30-35, page 21 lines 25-31).

3.11 for claim 15: A method according to claim 13, characterized in that frames, which carry said coded data and said signalling information, are constructed on the edge of the packet network from the non-redundant information transmitted over the packet network (page 21 lines 25-31, page 22 lines 4-17, entire page 26).

The subject-matter of claims 2, 3, 4, 6, 7, 8, 10, 11, 13, 14, 15 is therefore not new in the sense of Article 33(1) and (2) PCT.

4. The subject-matter of claim 5 does not involve an inventive step in the sense of Article 33(3) PCT. The characterising feature of this claim to carry in each packet data frames or parts of data frames related to more than one connection would be a normal design possibility for a person skilled in the art of packet transmission techniques.

5. The subject-matter of claims 9 and 12 does not involve an inventive step in the sense of Article 33(3) PCT. The characterising feature of these claims is disclosed in the document D2 on page 11 lines 22-29. It would be therefore within normal practice of a skilled person to apply the modification presented in the document D2 to the transmission technique disclosed by D1 to arrive at the solution claimed.

6. The subject-matter of claim 16 does not involve an inventive step in the sense of Article 33(3) PCT. Document D1 discloses a communication method between a mobile station of a cellular network and a workstation connected to a packet network, utilising most of the characterising features of claim 16, while the difference between the claim and the available prior art being that two cellular systems, instead of one system and one workstation, communicate through such an established connection. Considering the facts disclosed in D1 (indicated in paragraphs 2 and 3) that the connection is transparent and bidirectional, it would

be apparent for the skilled person that such a connection could carry communication traffic between any two compliant devices, thus between two mobile cellular networks as well, what leads to the result claimed without the need of inventive step.

7. The present application does not meet the requirements of Article 33 PCT, because the subject-matter of independent claim 17 is not new in the sense of Article 33(1) and (2) PCT. Document D2 discloses (references in parentheses applying to this document):

- means for receiving data in telephony network format (Fig. 1 RBS 17)
- means for sending data in packet format (Fig. 1 E-IFW 14) comprising:
- means for separating the frames that carry coded data and certain signalling information related to the coding from the received data (page 7 lines 3-12, page 8 lines 4-5 and page 11 lines 4-6),
- means for extracting data from said frames and means for encapsulating the extracted data into packet protocol packets (page 7 lines 29-31 and page 8 lines 27-30).

The subject-matter of claim 17 is therefore not new.

8. The present application does not meet the requirements of Article 33 PCT, because the subject-matter of independent claim 18 is not new in the sense of Article 33(1) and (2) PCT. The subject-matter of this independent claim describes the arrangement containing means to carry out in reverse direction the communication process described in claim 18 and known from the document D2 (see paragraph 7). Document D2 summarises on page 9 lines 17-18 that the indicated disclosure also apply to reverse communication which is further accomplished in claims 1 to 6 of this document, thus the subject-matter of claim 18 is already known.

9. The present application does not meet the requirements of Article 33 PCT, because the subject-matter of independent claim 19 is not new in the sense of Article 33(1) and (2) PCT. The subject-matter of this independent claim describes an arrangement (a gateway) having collated all the characterising features of

claims 17 and 18. These features are already known from the document D2, reference is made to paragraphs 7 and 8.

10. The present application does not meet the requirements of Article 33 PCT, because the subject-matter of claim 20 is not new in the sense of Article 33(1) and (2) PCT. The characterising features of this claim can be found in claims 6 to 9 of document D2.

Remark:

While filing amended claims the applicant is requested to take into consideration the above comments. The applicant is requested to file amendments by way of replacement pages in the manner stipulated by Rule 66.8(a) PCT. In particular, fair copies of the amendments should be filed preferably in triplicate.

In order to facilitate the examination of the conformity of the amended application with the requirements of Article 34(2)(b) PCT, the applicant is requested to clearly identify the amendments carried out, no matter whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based (see also Rule 66.8(a) PCT). This is necessary to ensure beyond doubt that no subject-matter has been added which extends beyond the content of the application as originally filed, Article 34(2)(b) PCT, rendering all amendments made valid.

If the applicant regards it as appropriate these indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed.

Moreover, the applicant's attention is drawn to the fact that, as a consequence of Rule 66.8(a) PCT the examiner is not permitted to carry out any amendments under the PCT procedure, however minor these may be.

Re Item VI

1. Certain published documents (Rule 70.10)

Application No Patent No	Publication date *(day/month/year)*	Filing date *(day/month/year)*	Priority date *(valid claim)* *(day/month/year)*
WO 00/54529	14.09.00	25.02.00	10.03.99
WO 00/33590	8.06.00	23.11.99	3.12.98/15.09.99

According to Rule 64(3) attention is called in relation to both documents (referred to as D3 and D4) which both claim priority date earlier than the application, both address the same technical problem and both disclose a similar way to solve it, see D3 page 6 lines 14-19, claims 2-4, and D4 page 5 lines 8-19, page 6 lines 3-9, page 8 lines 17-21.

Re Item VII

1. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 and D2 is not mentioned in the description, nor are these documents identified therein.

Re Item VIII

1. Claims 1, 6 and 7 are not clear in the sense of Article 6 PCT. Claim 1 refers to "certain signalling information" feature, which "certain" definition does not carry any additional information and thus is vague and imprecise. Claim 6 refers to "certain information" and claim 7 refers to "said signalling information", both terms are therefore not consistent with the terminology of claim 1, contrary to Rule 10.2 PCT.

2. The meaning of "packet protocol packets" has not been recognised in claim 17.

3. The wording of claim 19 is not clear in the sense of Article 6 PCT. First the claim refers to "data in telephony network format", further the same feature being referenced as "the frames", which is contrary to Rule 10.2 PCT.

4. The syntax of claim 20 is not clear in the sense of Article 6 PCT. The expression "both means" should be avoided as suggesting an introduction of a new means, which is not the case there, and which does not facilitate the understanding of the claim without undue burden.

The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line below:

IPEA/ EP

PCT

DEMAND

under Article 31 of the Patent Cooperation Treaty:
The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only	
Identification of IPEA	Date of receipt of DEMAND

Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION		Applicant's or agent's file reference
		50064/SKU/PKK
International application No.	International filing date *(day/month/year)*	(Earliest) Priority date *(day/month/year)*
PCT/FI00/00622	6 July 2000 (06.07.00)	9 July 1999 (09.07.99)

Title of invention

Method for transmitting calls over packet network

Box No. II APPLICANT(S)

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*	Telephone No. / Facsimile No. / Teleprinter No.
NOKIA NETWORKS OY P.O. Box 300, FIN-00045 NOKIA GROUP, Finland	

State *(that is, country)* of nationality:	State *(that is, country)* of residence:
Finland	Finland

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

KOISTINEN, Tommi
Kyyhkysmäki 22 B 19, FIN-02600 ESPOO, Finland

State *(that is, country)* of nationality:	State *(that is, country)* of residence:
Finland	Finland

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

State *(that is, country)* of nationality:	State *(that is, country)* of residence:

☐ Further applicants are indicated on a continuation sheet.

PCT Chapter II

MU [redacted] 52

Sheet No 2

International application No
PCT/FI00/00622

Box No III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The following person is [X] agent [ ] common representative

and [X] has been appointed earlier and represents the applicant(s) also for international preliminary examination

[ ] is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked

[ ] is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier

Name and address: *(Family name followed by given name: for a legal entity, full official designation. The address must include postal code and name of country.)*

BERGGREN OY AB
P.O. Box 16, FIN-00101 HELSINKI, Finland

Telephone No
+358 9 693 701

Facsimile No
+358 9 693 3944

Teleprinter No

[ ] **Address for correspondence:** Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special addr ess to which correspondence should be sent

Box No IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION

Statement concerning amendments:*

1 The applicant wishes the international preliminary examination **to start on the basis of:**

[X] the international application as originally filed

the description
- [X] as originally filed
- [ ] as amended under Article 34

the claims
- [X] as originally filed
- [ ] as amended under Article 19 (together with any accompanying statement)
- [ ] as amended under Article 34

the drawings
- [X] as originally filed
- [ ] as amended under Article 34

2 [ ] The applicant wishes any amendment to the claims under Article 19 to be considered as reversed

3 [ ] The applicant wishes the start of the international preliminary examination **to be postponed** until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)) *(This check-box may be marked only where the time limit under Article 19 has not yet expired)*

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended

Language for the purposes of international preliminary examination: English

- [X] which is the language in which the international application was filed
- [X] which is the language of a translation furnished for the purposes of international search
- [X] which is the language of publication of the international application
- [ ] which is the language of the translation (to be) furnished for the purposes of international preliminary examination

Box No V ELECTION OF STATES

The applicant hereby **elects all eligible States** *(that is, all States which have been designated and which are bound by Chapter II of the PCT)*

excluding the following States which the applicant wishes **not to elect:**

PCT Chapter II

Sheet No 3

International application No
PCT/FI00/00622

Box No VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No IV, for the purposes of international preliminary examination:			For International Preliminary Examining Authority use only: received	not received
1 translation of international application	:	sheets	☐	☐
2 amendments under Article 34	:	sheets	☐	☐
3 copy (or, where required, translation) of amendments under Article 19	:	sheets	☐	☐
4 copy (or, where required, translation) of statement under Article 19	:	sheets	☐	☐
5 letter	:	sheets	☐	☐
6 other *(specify)*	:	sheets	☐	☐

The demand is also accompanied by the item(s) marked below:

1 ☒ fee calculation sheet

2 ☐ separate signed power of attorney

3 ☐ copy of general power of attorney; reference number, if any:

4 ☐ statement explaining lack of signature

5 ☐ nucleotide and or amino acid sequence listing in computer readable form

6 ☐ other *(specify)*:

Box No VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand)

BERGGREN OY AB

Sirpa Kuisma
Patent Agent

HELSINKI, Finland, 6 February 2001

For International Preliminary Examining Authority use only

1 Date of actual receipt of DEMAND:

2 Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3 ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply ☐ The applicant has been informed accordingly

4 ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5

5 ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82

For International Bureau use only

Demand received from IPEA on:

PCT

FEE CALCULATION SHEET

Annex to the Demand for international preliminary examination

International application No.	PCT/FI00/00622
Applicant's or agent's file reference	50064/SKU/PKK

For International Preliminary Examining Authority use only

Date stamp of the IPEA

Applicant

NOKIA NETWORKS OY

Calculation of prescribed fees

1. Preliminary examination fee	EUR 1533	P
2. Handling fee *(Applicants from certain States are entitled to a reduction of 75% of the handling fee. Where the applicant is (or all applicants are) so entitled, the amount to be entered at H is 25% of the handling fee.)*	EUR 147	H
3. Total of prescribed fees Add the amounts entered at P and H and enter total in the TOTAL box	EUR 1680	TOTAL

Mode of Payment

[X]	authorization to charge deposit account with the IPEA (see below)	[ ]	cash
[ ]	cheque	[ ]	revenue stamps
[ ]	postal money order	[ ]	coupons
[ ]	bank draft	[ ]	other *(specify)*:

Deposit Account Authorization *(this mode of payment may not be available at all IPEAs)*

The IPEA/ EP [X] is hereby authorized to charge the total fees indicated above to my deposit account.

[ ] *(this check-box may be marked only if the conditions for deposit accounts of the IPEA so permit)* is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.

Berggren Oy Ab

28150004	6 Februarv 2001	Pia Kulju, Patent Assistant
Deposit Account Number	Date *(day/month/year)*	Signature

PCT REQUEST

50064

Original (for **SUBMISSION**) - printed on 06.07.2000 11:27:30 AM

0 **0-1**	**For receiving Office use only** International Application No.	
0-2	International Filing Date	
0-3	Name of receiving Office and "PCT International Application"	
0-4 0-4-1	**Form - PCT/RO/101 PCT Request** Prepared using	PCT-EASY Version 2.90 (updated 10.05.2000)
0-5	**Petition** The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	**Receiving Office (specified by the applicant)**	National Board of Patents and Registration (Finland) (RO/FI)
0-7	**Applicant's or agent's file reference**	50064
I	**Title of invention**	METHOD FOR TRANSMITTING CALLS OVER PACKET NETWORK
II	**Applicant**	
II-1	This person is:	applicant only
II-2	Applicant for	all designated States except US
II-4	Name	NOKIA NETWORKS OY
II-5	Address:	P.O. Box 300 FIN-00045 Nokia Group Finland
II-6	State of nationality	FI
II-7	State of residence	FI
II-8	Telephone No.	+358-9-51121
II-9	Facsimile No.	+358-9-51168080
III-1	**Applicant and/or inventor**	
III-1-1	This person is:	applicant and inventor
III-1-2	Applicant for	US only
III-1-4	Name (LAST, First)	KOISTINEN, Tommi
III-1-5	Address:	Kyyhkysmäki 22 B 19 FIN-02600 Espoo Finland
III-1-6	State of nationality	FI
III-1-7	State of residence	FI

PCT REQUEST

50064

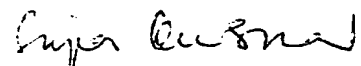
Original (for **SUBMISSION**) - printed on 06.07.2000 11:27:30 AM

IV-1	**Agent or common representative; or address for correspondence** The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent
IV-1-1	Name	BERGGREN OY AB
IV-1-2	Address:	P.O. Box 16 FIN-00101 Helsinki Finland
IV-1-3	Telephone No.	+358-9-693701
IV-1-4	Facsimile No.	+358-9-6933944
IV-1-5	e-mail	email.box@berggren.fi
V	**Designation of States**	
V-1	Regional Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	AP: GH GM KE LS MW MZ SD SL SZ TZ UG ZW and any other State which is a Contracting State of the Harare Protocol and of the PCT EA: AM AZ BY KG KZ MD RU TJ TM and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT EP: AT BE CH&LI CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE and any other State which is a Contracting State of the European Patent Convention and of the PCT OA: BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG and any other State which is a member State of OAPI and a Contracting State of the PCT
V-2	National Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH&LI CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
V-5	**Precautionary Designation Statement** In addition to the designations made under items V-1, V-2 and V-3, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except any designation(s) of the State(s) indicated under item V-6 below. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit.	
V-6	**Exclusion(s) from precautionary designations**	NONE

PCT REQUEST

50064

Original (for **SUBMISSION**) - printed on 06.07.2000 11:27:30 AM

VI-1	**Priority claim of earlier national application**		
VI-1-1	Filing date	09 July 1999 (09.07.1999)	
VI-1-2	Number	991584	
VI-1-3	Country	FI	
VI-2	**Priority document request** The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s):	VI-1	
VII-1	**International Searching Authority Chosen**	European Patent Office (EPO) (ISA/EP)	
VIII	**Check list**	number of sheets	electronic file(s) attached
VIII-1	Request	4	-
VIII-2	Description	14	-
VIII-3	Claims	3	-
VIII-4	Abstract	1	50064.txt
VIII-5	Drawings	5	-
VIII-7	TOTAL	27	
	Accompanying Items	paper document(s) attached	electronic file(s) attached
VIII-8	Fee calculation sheet	✓	-
VIII-9	Separate signed power of attorney	✓	-
VIII-10	Copy of general power of attorney	✓	-
VIII-16	PCT-EASY diskette	-	diskette
VIII-18	**Figure of the drawings which should accompany the abstract**	3	
VIII-19	**Language of filing of the international application**	English	
IX-1	**Signature of applicant or agent**		
IX-1-1	Name	BERGGREN OY AB	
IX-1-2	Name of signatory	Sirpa Kuisma	
IX-1-3	Capacity	Patent Attorney	

FOR RECEIVING OFFICE USE ONLY

10-1	**Date of actual receipt of the purported international application**	
10-2	**Drawings:**	
10-2-1	Received	
10-2-2	Not received	
10-3	**Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application**	
10-4	**Date of timely receipt of the required corrections under PCT Article 11(2)**	
10-5	**International Searching Authority**	ISA/EP
10-6	**Transmittal of search copy delayed until search fee is paid**	

PCT REQUEST

50064

Original (for **SUBMISSION**) - printed on 06.07.2000 11:27:30 AM

FOR INTERNATIONAL BUREAU USE ONLY

11-1	**Date of receipt of the record copy by the International Bureau**	

PCT (ANNEX - FEE CALCULATION SHEET)

50064

Original (for **SUBMISSION**) - printed on 06.07.2000 11:27:30 AM

(This sheet is not part of and does not count as a sheet of the international application)

0 0-1	**For receiving Office use only** International Application No.			
0-2	Date stamp of the receiving Office			
0-4 0-4-1	**Form - PCT/RO/101 (Annex)** **PCT Fee Calculation Sheet** Prepared using	PCT-EASY Version 2.90 (updated 10.05.2000)		
0-9	**Applicant's or agent's file reference**	50064		
2	**Applicant**	NOKIA NETWORKS OY, et al.		
12	**Calculation of prescribed fees**	fee amount/multiplier	total amounts (FIM)	
12-1	Transmittal fee T	⇨	800	
12-2	Search fee S	⇨	5 618,71	
12-3	International fee Basic fee (first 30 sheets) b1	2 431,8		
12-4	Remaining sheets	0		
12-5	Additional amount (X)	53,51		
12-6	Total additional amount b2	0		
12-7	b1 + b2 = B	2 431,8		
12-8	Designation fees Number of designations contained in international application	87		
12-9	Number of designation fees payable (maximum 8)	8		
12-10	Amount of designation fee (X)	523,22		
12-11	Total designation fees D	4 185,76		
12-12	PCT-EASY fee reduction R	-749,16		
12-13	Total International fee (B+D-R) I	⇨	5 868,4	
12-14	Fee for priority document Number of priority documents requested	1		
12-15	Fee per document (X)	422		
12-16	Total priority document fee P	⇨	422	
12-17	**TOTAL FEES PAYABLE (T+S+I+P)**	⇨	12 709,11	
12-19	**Mode of payment**	cheque		

VALIDATION LOG AND REMARKS

13-2-6	**Validation messages** **Contents**	Green? Reference number for attached copy of general power of attorney not indicated.

PCT/FI00/00622

PATENT COOPERATION TREATY

SKU IDAS

PCT

From the INTERNATIONAL BUREAU

To:

BERGGREN OY AB
P.O. Box 16
FIN-00101 Helsinki
FINLANDE

Berggren Oy Ab
27 -12- 2001

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and Administrative Instructions, Section 422)

Date of mailing (day/month/year) 13 December 2001 (13.12.01)	
Applicant's or agent's file reference 50064	IMPORTANT NOTIFICATION
International application No. PCT/FI00/00622	International filing date (day/month/year) 06 July 2000 (06.07.00)

1. The following indications appeared on record concerning:

[X] the applicant [ ] the inventor [ ] the agent [ ] the common representative

Name and Address	State of Nationality	State of Residence
NOKIA NETWORKS OY P.O. Box 300 FIN-00045 Nokia Group Finland	FI	FI
	Telephone No. +358-9-51121	
	Facsimile No. +358-9-51168080	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

[X] the person [ ] the name [X] the address [ ] the nationality [ ] the residence

Name and Address	State of Nationality	State of Residence
NOKIA CORPORATION Keilalahdentie 4 FIN-02150 Espoo Finland	FI	FI
	Telephone No. +358-9-51121	
	Facsimile No. +358-9-51168080	
	Teleprinter No.	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

[X] the receiving Office
[ ] the International Searching Authority
[ ] the International Preliminary Examining Authority
[ ] the designated Offices concerned
[X] the elected Offices concerned
[ ] other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Anne KARKACHI Telephone No.: (41-22) 338.83.38

Form PCT/IB/306 (March 1994)

004536442

Copy for the Elected Office (EO/US)

PCT/FI00/00622

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and Administrative Instructions, Section 422)

To:

BERGGREN OY AB
P.O. Box 16
FIN-00101 Helsinki
FINLANDE

Date of mailing (day/month/year)
13 December 2001 (13.12.01)

Applicant's or agent's file reference
50064

IMPORTANT NOTIFICATION

International application No.
PCT/FI00/00622

International filing date (day/month/year)
06 July 2000 (06.07.00)

1. The following indications appeared on record concerning:

[X] the applicant [ ] the inventor [ ] the agent [ ] the common representative

Name and Address
NOKIA NETWORKS OY
P.O. Box 300
FIN-00045 Nokia Group
Finland

State of Nationality: FI
State of Residence: FI
Telephone No.: +358-9-51121
Facsimile No.: +358-9-51168080
Teleprinter No.:

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

[X] the person [ ] the name [X] the address [ ] the nationality [ ] the residence

Name and Address
NOKIA CORPORATION
Keilalahdentie 4
FIN-02150 Espoo
Finland

State of Nationality: FI
State of Residence: FI
Telephone No.: +358-9-51121
Facsimile No.: +358-9-51168080
Teleprinter No.:

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

[X] the receiving Office
[ ] the International Searching Authority
[ ] the International Preliminary Examining Authority
[ ] the designated Offices concerned
[X] the elected Offices concerned
[ ] other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer
Anne KARKACHI

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 30 March 2001 (30.03.01)	
International application No. PCT/FI00/00622	**Applicant's or agent's file reference** 50064
International filing date (day/month/year) 06 July 2000 (06.07.00)	**Priority date** (day/month/year) 09 July 1999 (09.07.99)
Applicant KOISTINEN, Tommi	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

06 February 2001 (06.02.01)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO **34, chemin des Colombettes** **1211 Geneva 20, Switzerland**	Authorized officer Claudio Borton
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38